

DOES PARTICIPATION OF WOMEN IN AGRICULTURE CHANGES THEIR SOCIO-ECONOMIC STATUS – AN INVESTIGATION

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ABSTRACT

Agriculture is the backbone of developing economy and equal participation of women is essential to strengthen this sector and to use their potential. However, women are not participating in agricultural activities due to unaware of its benefits. Even though, few sections of women engaged in agriculture, how far their socio-economic conditions have changed is not known due to dearth of studies. Hence this paper focuses on assessing the benefits of women who participated in agriculture and the influential factors responsible for their participation. To address the objectives, primary data was collected from 33 participant women in agriculture and 118 non-participant women were identified through proportionate random sampling. The extent of participation and their socio economic changes were analyzed using descriptive statistics whereas factors influencing women participation was analyzed using logistic regression model. The results show that the level of women participation in agriculture is less than men. Crop production and livestock marketing is dominated by men. 72.73% of sample women witnessed their livelihood change after participation in agriculture. Agriculture has brought positive change on income of participant women which is significant at 10% level. The logistic regression results revealed that, out of eleven explanatory variables, seven variables were positively influenced women participation in agriculture. It is recommended that stakeholders shall encourage and assist women farmers in terms of access to farm inputs, incentives and marketing supports to enhance their participation.

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BACKGROUND AND RATIONALE

The international development community has recognized that agriculture is an engine of growth and poverty reduction in countries where it is the main occupation of the poor. Women who represent a crucial resource in agriculture as farmers, laborers and entrepreneurs, however face severe constraints than men in access to productive resources. Efforts by national governments and the international community to achieve their goals for agricultural development, economic growth and food security will be strengthened and accelerated if they build on the contributions that women make and take steps to alleviate these constraints (World Bank, 2008).

Women have historically used agriculture as one of the strategies to address poverty and improve livelihoods, and also to maintain the stability and sustainability of their families. Rural women play and their position in meeting the challenges of agricultural production and development are quite dominant and prominent in many countries (Ogunlela and Mukhtar, 2009). Women, especially in Africa have played a significant role in the sustainable development and economic development of their communities and countries (Onguono, 2010).

Like many African countries, the majority of women in Ethiopia hold low status in the society. They have been denied equal access to education, training and gainful employment opportunities and their involvement in policy formulation as well as decision making process has been minimal. Women participation in agriculture sector is increasing from time to time and their role in the dominant sector of the country is very crucial in production, processing and marketing. They are major contributors to the agricultural workforce, either as family members or in their own right as women heading households (Dawit, et al., 2012).

The major portion of women's labor force invested in production system including weeding, harvesting, household management, animal husbandry, marketing and post-harvest handling. Agricultural extension programs that ignore women's farming roles in agriculture, affect negatively agricultural production and consequently failure to achieve development objectives (FAO, 2007). Kabane (2010) asserts that tradition and cultural norms are the major challenges that limit the access of women to agricultural input, thereby leading to the invisibility of women in agricultural development.

Women often manage complex households and pursue multiple livelihood strategies which include producing agricultural crops, tending animals, processing and preparing food, working for wages in agricultural or other rural enterprises, collecting fuel and water, engaging in trade and marketing, caring for family members and maintaining their homes. Many of these activities are not defined as "economically active employment" in national accounts but they are essential to the well-being of rural households (FAO, 2010).

In the study area (Gorche district), majority of households' livelihood is mainly depending up on agriculture and is mostly carried out by men. The main role of women in the area is housewife; they prepare food, milking, make coffee and keep house for their husbands while they are at farm. Although there are enough natural resources in the district, rural women are not actively engaged in agricultural production except few due to social and cultural factors (GWADO, 2016). There are limited studies conducted regarding the implication of women participation and the factors influencing their participation in

agriculture in the study area. Hence, location or situation analysis is essential to identify the gaps and constraints so as to increase their participation in agricultural activities. Therefore, this research paper is expected to fill such gap by forwarding insights and implications for intervention.

1.1 Specific Objectives

The specific objectives of this research paper are;

- To understand the extent of women participation in agricultural activities in the study area
- To examine the socio economic change on women due to the participation in agricultural activities
- To identify the factors influencing women participation in agricultural activities

METHODOLOGY ADOPTED

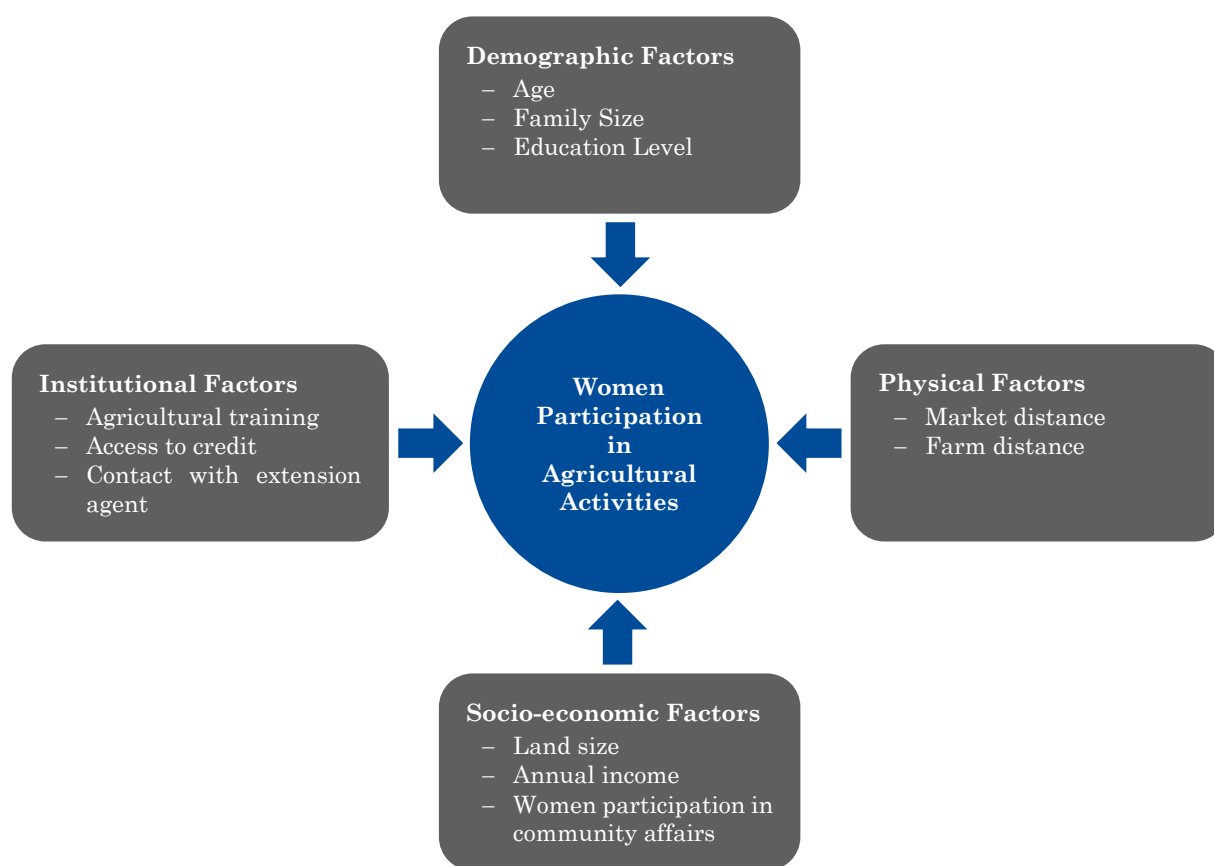
Descriptive design with mixed approach of qualitative and quantitative data was followed in this research. To select the district, villages and women respondents, multi-stage sampling procedure was employed. In the first stage, the study district was selected purposively due to the participation of women in the agricultural production is limited compared to other districts (GWADO, 2015). In the second stage, the sample district was stratified into two zones based on its agro ecology (middle and lower land zone). In the third stage, two villages from ten midland zone villages and three villages from twelve lower land zone villages (total of five villages) were selected randomly.

A total of 3892 women above 15 years old (832 women from participant group and 3060 women from non-participant group) was considered as target population (GWADO, 2015). To identify the sample size of 151 (33 women from participant group and 118 from non-participant group), Yamane (1967) formula at 8% precision level was used. To determine respective sample from five villages, proportionate sampling technique was used. Finally, representative sample from each group will be selected through simple random sampling technique. Primary data was collected from sample women using interview schedule. In addition, Key Informant (KI) interview was carried out to elicit the information from relevant stakeholders. Secondary data was used from different sources such as research reports, office documents, journal articles etc. Collected data was analysed using SPSS (version 20). Simple statistics such as percentages, Chi-square and t-test were used to arrive the meaningful results. Besides, logistic regression model was used to identify the influencing factors of women participation in agriculture activities. The dependent variable is women participation in agricultural production and the explanatory variables included in the model are age, family size, education status, land size, annual income, contact with extension agent, participation in community affairs, participation in agricultural training programme, distance from market, credit utilization and farm distance etc.

2.1 Conceptual Framework

Review of related empirical and theoretical literatures revealed that there are different factors that influence women participation in agricultural activities. Those factors are categorized under demographic factors, institutional factors, physical factors and socio economic factors and summarized in the following figure 1.

Figure – 1: *Conceptual Framework*



RESULTS AND DISCUSSION

3.1 Demographic and Socio Economic Characteristics of Respondents

It is essential to understand the profile of sample women so as to see the level of influence of such variables for participation of women in agricultural activities. To arrive the meaningful results, mean, frequency and percentages analysis were carried out. In addition, Chi square test (for categorical variables) and t-test (for continuous variables) were also used with the aim of comparing two groups (participant women in agricultural production activities and non-participant women).

3.1.1 Age

It is assumed that if the age of the women increases, due to the vast exposure, experience and opportunities to create initial capital they may participate in agricultural activities. And the middle aged women may have their own responsibilities and influences in the family and household at all aspects (CSA, 2011). The survey results show that the maximum age of the respondents was 70 and the minimum was 18. Majority (57.58%) of participant women found in the age group of 15-30 while only 37.29% non-participant women fall in this age category. The mean age was identified to be 33.95 with standard deviation of 10.96. The main reason for this could be, as age of women increases their household burdens also increase as they have more children and family responsibility.

Table – 1: *Age Distribution of the Respondents*

Age category	Participant Women		Non Women		Participant Total	
	Freq.	%	Freq.	%	Freq.	%
15-30	19	57.58	44	37.29	63	41.72
31-45	14	42.42	56	47.46	70	46.36
46-60	-	-	14	11.86	14	9.27
Above 60	-	-	04	3.39	04	2.65
Total	33	100	118	100	151	100

Source: *Primary data, 2017*

3.1.2 Marital Status

According to the International Labor Organization (2013), majority of the women in Ethiopia was married and the married women have an opportunity of additional income from their husbands which can be used as source to participate in agricultural activities. Accordingly, it is found from the present survey results that 88.1% of respondents are married and 72.7% and 92.4% of participants and non-participants are married respectively, they have husbands to help them in sustaining the economic status of the family. It is found that married women are more participants in agricultural activities than divorced and widowed women.

Table – 2: *Marital Status of the Respondents*

Marital status	Participant Women		Non Participant Women		Total	
	Freq.	%	Freq.	%	Freq.	%
Married	24	72.7	109	92.4	133	88.1
Divorced	-	-	02	1.7	02	1.3
Widowed	09	27.3	07	5.9	16	10.6
Total	33	100	118	100	151	100

Source: *Primary data, 2017*

3.1.3 Educational Status

Education is one of the important factors that helps development to be realized. Its purpose is to communicate accumulated wisdom and knowledge from one generation to the next. It can also boost active participation in innovation and the development of new knowledge (Rad et al., 2009). According to Kebede G. (2011) the low level of education might have significant impact on the low level of participation of women in agricultural activities and their role in other development issues. In the study area, women constitute nearly half of the rural population and play a vital role in the rural economy (GWOAD, 2016). The survey results (Table 3) indicates that about 66.2% of respondents are illiterates. Only

28.8% of non-participants are literates while 51.5% of participants are illiterates. Women need to be considered equal partners in the development process. Not only do education and training go a long way in enhancing rural economy but also in raising the status of women, enable development of their potential and help them to live as independent and equal partners. The high percentage of illiterate respondents in this study group has implication towards less family income and associated conditions of poverty. This indicated that low education leads to low participation in the agricultural activities.

Table – 3: *Educational Status of Respondents*

Educational status	Participant Women		Non Participant Women		Total	
	Freq.	%	Freq.	%	Freq.	%
Illiterates	16	48.5	84	71.2	100	66.2
1-4	05	15.2	20	16.9	25	16.6
5-8	10	30.3	`	10.2	22	14.6
9-10	02	6.1	02	1.7	04	2.6
Total	33	100	118	100	151	100

Source: *Primary data, 2017*

3.1.4 Family Size

Family size can be defined as the number of members in a family. It is one of the important factors which was expected to influence women participation in agricultural activities. Results show that majority (53.4%) of non-participant respondents have family size that ranges from 5 to 7 while only 30.3% of participants group have family size in this range.

This indicates that, non-participant group spend more time in caring their children than their counter part, which has its own negative impact on agricultural activities participation. As the family increase, participation of women in agricultural activities is less. This could be as family size increases, it traps women with lots of workload in the households such as washing clothes, fetching water, bearing their children, cooking food and other different activities (Kebede, 2011). Therefore, this research found that family size affects women participation level in agricultural activities in the study area.

Table – 4: *Family Size of the Respondents*

Family size	Participant Women		Non-participant Women		Total	
	Freq.	%	Freq.	%	Freq.	%
2-4	23	69.7	31	26.3	54	35.8
5-7	10	30.3	63	53.4	73	48.3
8-10	-	-	24	20.3	24	15.9
Total	33	100	118	100	151	100

Source: *Primary data, 2017*

3.1.5 Land Holding

Land is one of the most important production factors which enable farmers to carry out different agricultural activities. Data collected on possession of land revealed that, 50.33% of the sample women acquired 0.15-0.65 hectares and 43% and 6.66% of them acquired 0.66-1.16 hectares and more than 1.16 hectares respectively. About 51.7% of non-participant women have land size of 0.66-1.16 ha while only 12.1% of participant women have land size of 0.66-1.16 ha. Most of the women in rural areas by social and cultural beliefs suffer from discriminatory practices that prevent them from accessing land in the same way as men either from government or their parents.

Table – 5: Land Holding of the Respondents

Land holding in hectares	Participant Women		Non Participant Women		Total	
	Freq.	%	Freq.	%	Freq.	%
0.15-0.65	19	57.6	57	48.3	76	50.33
0.66-1.16	04	12.1	61	51.7	65	43.00
Above 1.16	10	30.3	-	-	10	6.66
Total	33	100	118	100	151	100

Source: Primary data, 2017

3.1.6 Contact with Development Agents

Development agents are experts who provide different services related with agriculture at village level for the rural households. They deliver different training and supports to farmers and motivate them to use modern technology to increase agricultural production and productivity. It is obvious that farmers who have more contact with development agents know more about modern agricultural technology. Out of total sample, 62.3% had no contact with Development Agents (DAs). Similarly, 36.4% of participant women and 69.5% of non-participant women had no contact with DAs. This indicate that women spend more time on household management activities and have less time to attend different services provided by development agents.

Table – 6: Respondents' Contact with Development Agents

Contact frequency	Participant Women		Non Women	Participant		Total	
	Freq.	%	Freq.	%	Freq.	%	
No contact	12	36.4	82	69.5	94	62.3	
1-4	14	42.4	32	27.1	46	30.6	
5-8	07	21.2	04	3.4	11	7.2	
Total	33	100	118	100	151	100	

Source: Primary data, 2017

3.1.7 Religious Affiliation

Religion has its own role on women who participate in agricultural activities in the study area. As shows in the table 6, 77.5% of respondents are Protestants while 69.7% and 79.7% of participants and non-participants are the followers of this religion.

Table – 7: *Religious Affiliation of Sample Women*

Religious group	Participant Women		Non Participant Women		Total	
	Freq.	%	Freq.	%	Freq.	%
Protestant	23	69.7	94	79.7	117	77.5
Orthodox	04	12.1	12	10.2	16	10.6
Muslim	05	15.2	08	6.8	13	8.6
Catholic	01	3.0	04	3.4	05	3.3
Total	33	100	118	100	151	100

Source: *Primary data, 2017*

3.2 Extent of Women Participation in Agricultural Activities

To improve livelihood of their households, farmers in rural areas participate in different agricultural activities. Crop production activities ranges from land preparation to harvest and selling the produced product. The study results revealed that, participation in agricultural activities in the study area is dominated by men even though women participation in some agricultural activities is high. The percentage distribution of activities shows that rural women in the study area mostly participate in activities such as milking (84.8%) and livestock feeding (90.73%).

Crop and livestock marketing is dominated by men because women are not allowed to hold cash in their hand and they get from their husbands when they need it based on the willingness and consent of their husbands. Few women participate occasionally almost in all activities as shown in figure 3, for example, 90% of them occasionally participate in weeding and 88% of them participate in harvesting of crops.

Figure – 2: *Level of Male Participation in Agricultural Activities*

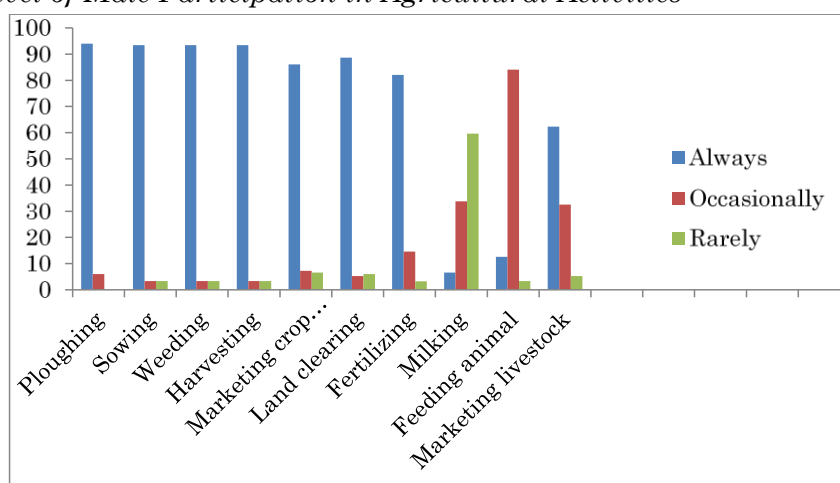
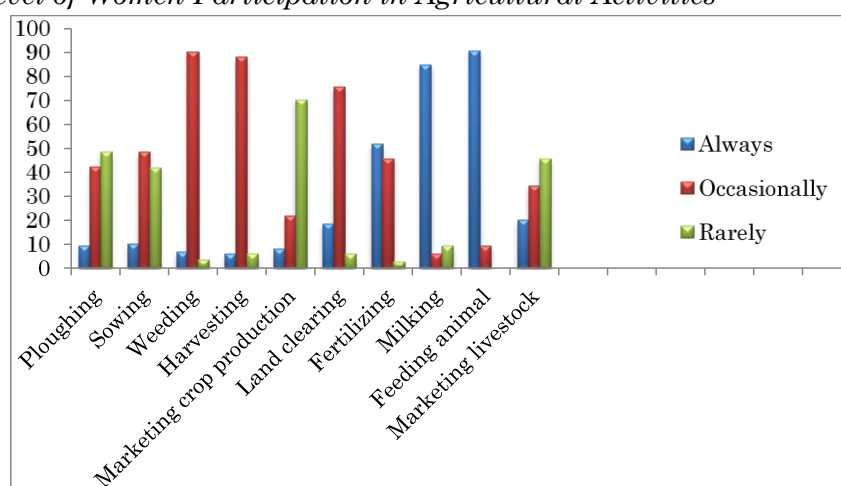


Figure – 3: Level of Women Participation in Agricultural Activities

3.3 Socio Economic Change Due to the Participation of Women in Agricultural Activities

Agriculture has its own contribution in changing the socio economic conditions of the society. It improves income, living standard, food security and livelihood (Dawit, et al., 2012). To compare and contrast the changes observed on socioeconomic status of women after their participation in agricultural activities, paired sample t-test was used. For this, changes on their livelihood, social status, intra-household communication, decision making at household level, annual income, asset holding, expenditures for health, children's school expenditure and food expenditure are considered as indicators of change. It is revealed from the results (Table 8), 72.73% of them reported that their livelihood has considerably improved after they participate in agricultural activities. Similarly, 84.85% of them reported that their decision making level at household level has been slightly improved from time to time. Moreover, 54.55% of them reported that their Intra household relationship and social status have slightly improved because of their participation in agricultural activities.

Table – 8: Changes Observed on Socioeconomic Status of Women (Discrete Variables)

Change Variables								
Changes observed	Livelihood		Social status		Intra household relationship		Decision making at household level	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Considerably improved	24	72.73	10	30.3	15	45.5	05	15.15
Slightly improved	05	15.15	18	54.55	18	54.55	28	84.85
No change	04	12.12	05	15.15	-	-	-	-
Total	33	100	33	100	33	100	33	100

Source: Primary data, 2017

Agriculture is the main source of income for farmers in rural areas. The results presented in Table 9 revealed that agriculture has brought positive change on income of participant women which is 10% significance level. The average annual income of family before participation in agricultural activities was 21212.12 Birr (National currency), but after their participation it has raised to 29181.81 Birr.

Furthermore, annual expense on food items purchased has reduced from Birr 6257.57 to Birr 3736.96 which is significant at 10% level. Before their participation, they need to purchase food items from other sources, but after their participation they are able to feed their family from their own production. The types of agricultural activities engaged are Cereal crops (maize, sorghum, wheat, teff, millet), Cash crops (pepper, soya been, chat, coffee), Inset, Root crops, Vegetables, Fruits trees and others.

The other change observed was on livestock and asset holding. The estimated average value of household physical assets before participation in agricultural activities was 8500 Birr. But this figure has risen to 16418.18 Birr after engaged in agricultural activities with significance at 1% level. The estimated average value of livestock was 2560.9 Birr before participation in agricultural activities while it is 6606.9 Birr after participation and is statistically significant at 1% level.

Moreover, the change observed in annual expenditure in children's schooling and health expense was statistically not significant. The main reason for this is they spend more on other items rather than children's schooling and health expense.

Table – 9: *Changes Observed on Socioeconomic Status of Women (Continuous Variables)*

Change variables	Sample size (N)	Mean		t-test	p-value
		Before	After		
Value of Livestock owned in Birr	33	2560.9	6606.9	5.43	0.00***
Annual income	33	21212.12	29181.81	1.85	0.07*
Annual expenditure on children schooling	33	3248.48	3339.39	0.23	0.82
Annual food expense	33	6257.57	3736.96	1.77	0.08*
Annual health expense	33	682	677	0.015	0.98
Value of Asset holding in Birr	33	8500	16418.18	7.2	0.00***

Source: *Primary data, 2017*

Note: *** and * means significant at 1% and 10% respectively

3.4 Factors Influencing Women's Participation in Agricultural Activities

In order to identify the factors influencing women's participation in agricultural activities, logistic regression analysis was carried out. Eleven independent variables were hypothesized which include, age, family size, educational status, land holding, annual income, contact with extension agents, women participation in community affairs, participation in agricultural training programs, distance from market, credit availed and farm distance. Among them, seven are found to be significant variables in influencing

women participation in agricultural activities either positively or negatively while the rest four variables are not significant in explaining the variations in the dependent variable. Family size, educational status, annual income, contact with extension agents, participation in agricultural training programs, women participation in community affairs and distance from market are identified by logistic regression model that influence women participation in agricultural activities.

Looking into the output of logistic regression (Table 10), it is found that contact with agricultural extension agents' influences women participation in agricultural production at 1% significance level. The odds ratio indicates that, a unit contact made with agricultural extension agent by women, increases their participation in agricultural production by 1.74 units. This implies that, the more women have contacts with agricultural extension services, the more will have the tendency to participate in agricultural activities. The more visit by the extension agents to the farm women, they will have more awareness about new technologies and use of existing technologies and there will be more chances for their participation in agricultural activities. This is consistence with the findings of Njoku et al., (2009).

Moreover, educational status, annual income and participation in community affairs influence women participation in agricultural activities positively at 5% significance level. The odds ratio of education indicates that increase in one-year education level increase women participation in agricultural production by 1.28 units. As respondents' educational status improved, they are more exposed to modern farming techniques. This finding is consistent with the study conducted by Ogumbameru et al., (2004) where highly educated farmers can get information on modern agricultural production techniques from a wide range of sources such as extension agents, electronic or print media, internet etc. Also a unit participation in community affairs increases participation in agricultural production by 4.6 units. Now-a-days the issues in rural area are mostly agricultural related issues. So if women participate in community affair, they are more likely to get information related with agricultural production.

Looking into the odds ratio of annual income of the respondents, increase in one Birr of annual income of the family, increase their participation in agricultural production by 1 unit. This could be as women have more income, they have more capability to purchase different agricultural inputs and tools which is important to undertake agricultural activities

Similarly, participation in agricultural training influences women participation in agricultural production positively at 10% significance level. The odds ratio favoring participation by a factor of 2.76 for those women who were attend agricultural training programs. This implies that farmers' participation in agricultural production activities is greatly enhanced if they receive more training on modern agricultural production techniques. In line with this result, Sabo (2004) reported that the output of women farmers in Sub-Saharan Africa was doubled after being exposed to more extension training activities

Furthermore, the output also shows that family size and market distance influence women participation in agricultural activities negatively at 5% and 10% significance level respectively. When the family size increases, women's burden to handle their children and other household activities will also increase. This affects their participation in agricultural activities since competing their time on managing their family members. When main

market is far from the residents of women it is difficult for them to access different agricultural inputs and market information. This would affect their participation in agricultural activities.

Table – 13: *Logistic Regression Model Results on Factors Influencing Women Participation in Agricultural Activities*

Variables	Odds ratio	Coefficient	Std. Err.	Z	p-value
Age	0.9928579	-0.0071677	0.0318513	-0.23	0.822
Family Size	0.6189356	-0.4797541	0.2035448	-2.36	0.018**
Education	1.286272	0.2517483	0.1151785	2.19	0.029**
Land Size	0.425623	-0.8542014	1.014072	-0.84	0.400
Annual Income	1.000215	0.0002154	0.000105	2.05	0.040**
Contact with Ex. Agents	1.746319	0.5575099	0.2144524	2.60	0.009***
Agri-training	3.344721	1.207383	0.6342552	1.90	0.057*
Parti- Commu - Affairs	4.609395	1.528097	0.6612914	2.31	0.02**
Market Distance	0.8681942	-0.1413398	0.0853511	-1.66	0.098*
Credit Access	2.668208	0.9814071	0.706923	1.39	0.165
Farm Distance	1.092466	0.0884378	0.105388	0.8	0.401

Note: ***, ** and * means significant at 1%, 5% and 10% respectively.

Source: *Own survey, 2017*

CONCLUSION AND RECOMMENDATIONS

Agriculture is the backbone of Ethiopia and plays a vital role in achieving food security and reduction of poverty. It is well known fact that women participation in the agriculture activities is more vital since this provides different sources for their livelihood. From this research, it found that those women who participated in agricultural activities were able to witness of improving their socio-economic status. However, participation of rural women in the agricultural activities in the study area is far behind due to many factors even though they are sharing half of the rural population. Therefore, some concrete steps need to be undertaken by the major intervention agencies namely women affairs office and agricultural development offices aiming at stimulating the practice of women's involvement in agricultural activities. Intervention should be in the areas of farm planning, decision making, gender equality and awareness creation on socio-cultural attitude of the people towards women. Based on the findings, the following policy implications are forwarded.

- Government should encourage and assist women farmers by giving them special attention in terms of access to needed farm inputs and incentives
- Women adult literacy education program is required to help women farmers acquire basic skills and abilities to seek and receive agricultural information through extension agents.

- There should be training programs for rural women involved in agricultural activities and motivating others to be engaged in the same activities
- Favourable market conditions should be created by the concern stakeholders
- Women should be encouraged and appreciated by the government and non-governmental agencies for their participation in agricultural development.

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